

WHAT IS CLAIMED:

1.           A method for making a casingless sausage product comprising:
  - 5           providing an emulsion, a first heating element comprising a conductive heating element, and a second heating element, heating the emulsion initially with the first heating element from a first temperature to an initial heating temperature;
  - 10          heating the previously heated emulsion with the second heating element from the initial heating temperature to a second, higher heating temperature to cook the previously heated emulsion and to produce a casingless sausage; and cooling the casingless sausage to produce the casingless
  - 15          sausage product.
2.           The method of claim 1, providing the emulsion further comprising providing a meat emulsion.
- 20           3.           The method of claim 1, providing the first heating element further comprising providing a heat exchanger.
- 25           4.           The method of claim 1, heating the emulsion with the first heating element further comprising heating the emulsion to the initial heating temperature from the first temperature of about 40°F.

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5. The method of claim 1, heating the emulsion with the first heating element further comprising heating the emulsion to an initial heating temperature that is less than about 120°F.

5 6. The method of claim 5, heating the emulsion with the first heating element further comprising heating the emulsion to an initial heating temperature from about 70°F to about 100°F.

7. The method of claim 1, heating the emulsion with  
10 the first heating element further comprising heating the emulsion for about 5 seconds to about 30 seconds.

8. The method of claim 1, heating the previously heated emulsion further comprising rapidly heating the previously  
15 heated emulsion.

9. The method of claim 8, rapidly heating the previously heated emulsion further comprising rapidly heating the previously heated emulsion paste with microwave energy.

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10. The method of claim 8, rapidly heating the previously heated emulsion further comprising rapidly heating the previously heated emulsion with radio frequency (RF) energy.

25 11. The method of claim 1, heating the previously heated emulsion further comprising heating the previously heated emulsion to the second heating temperature that is from about 130°F to about 170°F.

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12. The method of claim 1, heating the previously heated emulsion to the second heating temperature with the second heating element further comprising heating the previously heated emulsion for about 2 to about 60 seconds.

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13. The method of claim 1, cooling the casingless sausage further comprising passing the casingless sausage through a chiller after exiting the second heating element.

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14. The method of claim 13, passing the casingless sausage through the chiller further comprising passing the casingless sausage under a chilled brine.

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15. The method of claim 1, cooling the casingless sausage further comprising cooling the casingless sausage from the second heating temperature to a cooling temperature of about 85°F to about 35°F.

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16. The method of claim 15, cooling the casingless sausage further comprising cooling the casingless sausage to a cooling temperature of about 50°F.

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17. The method of claim 1, further comprising exposing the casingless sausage to an ambient condition prior to cooling.

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18. The method of claim 17, exposing the casingless sausage to an ambient condition further comprising exposing the casingless sausage to an ambient condition for about 10 to about 120 seconds.

19. The method of claim 1, further comprising reducing a size of a conduit that carries the emulsion to the first heating element.

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20. The method of claim 19, reducing the size of the conduit further comprising reducing a diameter of a tube from about 4" to about 1".

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21. The method of claim 20, the emulsion entering a larger end of the tube at about 200 lb/hour.

22. The method of claim 20, the emulsion exiting a reduced end of the tube at about 180 lb/hour.

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23. The method of claim 1, further comprising reducing a size of a conduit that carries the previously heated emulsion from the first heating element to the second heating element.

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24. The method of claim 23, reducing the size of the conduit further comprising reducing a diameter of a tube from about 1" to about 0.5"

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25. The method of claim 24, the emulsion entering the larger end of the tube at about 200 lb/hour.

26. The method of claim 24, the emulsion exiting the reduced end of the tube at about 10 to about 40 ft/min.

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27. The method of claim 1, further comprising cutting the casingless sausage product into individual sausages.

28. The method of claim 27, cutting the casingless  
5 sausage further comprising cutting the casingless sausage into lengths of about 1" to about 6".

29. The method of claim 28, the individual sausages having a diameter from about .6" to about 1.2".

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30. The method of claim 1, prior to cooling, further comprising directing the casingless sausage through an insulative member.

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31. The method of claim 1, prior to cooling, further comprising rinsing the casingless sausage.

32. A system for making a casingless sausage product from an emulsion comprising:

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a first heating element, the first heating element comprising a conductive heating element;

a second heating element; and

a chiller,

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the emulsion being initially heated with the first heating element from a first temperature to an initial heating temperature, then heated again from the initial heating temperature to a second, higher heating temperature with the second heating element to form a casingless sausage, the chiller producing the casingless sausage product from the casingless  
30 sausage from the second heating element.

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33. The system of claim 32, the emulsion comprising a meat emulsion.

5        34.        The system of claim 32, the first heating element comprising a heat exchanger.

35.        The system of claim 32, the first temperature being about 40°F.

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36.        The system of claim 32, the initial heating temperature being less than about 120°F.

37.        The system of claim 32, the initial heating  
15 temperature being from about 70°F to about 100°F.

38. The system of claim 32, the first heating element initially heating the emulsion from about 5 seconds to about 30 seconds.

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39. The system of claim 32, the second heating element comprising a rapid heating element.

40.        The system of claim 39, the rapid heating element  
25 comprising a microwave source.

41.        The system of claim 39, the rapid heating element comprising a radio frequency (RF) source.

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42. The system of claim 32, the second heating temperature being between about 130°F and about 170°F.

43. The system of claim 32, the second heating element  
5 heating the previously heated emulsion for about 2 seconds to about 60 seconds.

44. The system of claim 32, the chiller applying chilled brine onto the casingless sausage.  
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45. The system of claim 32, a temperature of the casingless sausage being cooled from the second heating temperature to a cooling temperature of about 85°F to about 35°F.

46. The system of claim 45, the chiller reducing the temperature of the casingless sausage to a lower temperature of about 50°F.  
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47. The system of claim 32, the casingless sausage  
20 being exposed to an ambient condition prior to entering the chiller.

48. The system of claim 32, further comprising a pump that provides the emulsion to the first heating element.  
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49. The system of claim 32, further comprising a reducing element that reduces a size of a conduit carrying the emulsion from the pump to the first heating element.  
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50. The system of claim 49, the conduit comprising a tube, a diameter of the tube being reduced from about 4" to about 1" by the first reducing element.

5 51. The system of claim 50, the emulsion entering the larger end of the tube at about 200 lb/hour.

52. The system of claim 50, the emulsion exiting the reduced end of the tube at about 10 ft/min to about 40 ft/min.

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53. The system of claim 32, further comprising a reducing element that reduces a size of a conduit that carries the previously heated emulsion from the first heating element to the second heating element.

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54. The system of claim 53, the conduit comprising a tube, a diameter of the tube being reduced from about 1" to about 0.5"

20 55. The system of claim 54, the previously heated emulsion entering the larger end of the tube at about 200 lb/hour.

25 56. The system of claim 55, the previously heated emulsion exiting the reduced end of the tube at about 19 ft/min to about 21 ft/min.

30 57. The system of claim 32, further comprising a cutter, the casingless sausage product being cut into individual pieces by the cutter.



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58. The system of claim 57, the individual pieces having a width of about 15 mm to about 30 mm.

59. The system of claim 57, the individual pieces  
5 having a length from about of about 1" to about 6".

60. The system of claim 32, the casingless sausage product being rinsed before entering the chiller.

10 61. A system for making a casingless sausage product from an emulsion comprising:

a first heating element, the first heating element comprising a direct heating element;

a second heating element; and

15 a chiller,

the emulsion being initially heated with the first heating element from a first temperature to an initial heating temperature, then heated again from the initial heating temperature to a second, higher heating temperature with the  
20 second heating element to form a casingless sausage, the chiller producing the casingless sausage product from the casingless sausage from the second heating element.

62. The system of claim 61, the direct heating element  
25 comprising steam or hot water.